POWER MATE TECHNOLOGY CO., LTD.

QEB75 SERIES

75 WATTS DC-DC CONVERTER

FEATURES

- 75 WATTS MAXIMUM OUTPUT POWER
- SINGLE OUTPUT UP TO 25A
- COMPACT 2.28 X 1.45 X 0.50 INCH PACKAGE
- HIGH EFFICIENCY UP TO 90%
- 2:1 WIDE INPUT VOLTAGE RANGE
- FIXED SWITCHING FREQUENCY
- INDUSTRY STANDARD FOOTPRINT
- NO MINIMUM LOAD REQUIRED
- ADJUSTABLE OUTPUT VOLTAGE
- UNDER-VOLTAGE LOCKOUT
- INPUT TO OUTPUT ISOLATION: 1600VDC
- CE MARK MEETS 2006/95/EC, 2011/95/EC AND 2004/108/EC
- SAFETY MEETS UL60950-1, EN60950-1 AND IEC60950-1
- ISO9001 CERTIFIED MANUFACTURING FACILITIES
- COMPLIANT TO RoHS EU DIRECTIVE 2011/65/EU

APPLICATIONS

Wireless Network
Telecom/Datacom
Industry Control System
Distributed Power Architectures
Semiconductor Equipment

OPTIONS

Positive logic Remote on/off, Pin length

DESCRIPTION

QEB75 single output DC/DC converters provide up to 75 watts of output power in an industry standard quarter-brick package and footprint. These units are specifically designed to meet the power needs of low-voltage silicon. All models feature a wide input range, trimmable output voltage and a 25A current rating.

TECHNICAL SPECIFICATION

All specifications are typical at nominal input, full load and 25ºC otherwise noted

OUTPUT SPECIFICATIONS		
Output power		75 Watts, max.
Voltage accuracy		± 1.5%
Minimum load		0%
Voltage adjustability	(Note 5)	+ 10% , -20%
Line regulation	LL to HL at Full Load	±0.2%
Load regulation	No load to Full Load	±0.3%
Remote Sense	(Note 5)	10% of Vout(nom)
Ripple and noise	20MHz bandwidth (Measured with a 1μFM/C and a 10μFT/C)	See table
Temperature coefficient		±0.02% / ºC, max.
Transient response recovery time	25% load step change	200μs
Over voltage Protection threshold (Non-latching Hiccup)		120% of Vout(nom) max.
Over Current Protection threshold		110% ~ 140% of Iout Rated
Short circuit protection		Continuous, automatics recovery

GENERAL SPECIFICATIONS		
Efficiency		See table
Isolation voltage	Input to Output Input(Output) to Base-plate	1600 VDC, min. 1minute 1000 VDC, min. 1minute
Isolation resistance	500VDC	10^7 ohms, min.
Isolation capacitance		2500 pF, max.
Switching frequency		270kHz±10%
Design meets safety standard		IEC60950-1, UL60950-1, EN60950-1
Case material		Aluminum base-plate
Weight (approx)		42g (1.46 oz)
MTBF (Note 1)	BELLCORE TR-NWT-000332 MIL-HDBK-217F	2.500×10^6 hrs 4.422×10^5 hrs

INPUT SPECIFICATIONS			
Input voltage range	24VDC nominal input 48VDC nominal input		18 ~ 36VDC 36 ~ 75VDC
Input filter			L-C type
Input surge voltage	24VDC input 48VDC input		50VDC 100ms, max. 100VDC 100ms, max.
Start up time	Nominal input and constant resistive load	Power up Remote ON/OFF	25ms 25ms
Start-up voltage	24VDC input 48VDC input		18VDC, max. 36VDC, max.
Shutdown voltage	24VDC input 48VDC input		15VDC 32VDC
Remote ON/OFF (Note 6)			
Negative logic(Standard)	DC-DC	ON	Short or 0V < Vr < 1.2V
	DC-DC	OFF	Open or 3V < Vr < 15V
Positive logic(Option)	DC-DC	ON	Open or 3V < Vr < 15V
	DC-DC	OFF	Short or 0V < Vr < 1.2V
Input current of remote control pin	Nominal input		-0.5~1.0mA
Remote off state input current	Nominal input		2.5mA

ENVIRONMENTAL SPECIFICATIONS	
Operating base-plate temperature range (Note 7)	-40ºC ~ +100ºC
Over temperature protection	+110ºC
Storage temperature range	-55ºC ~ +125ºC
Thermal shock	MIL-STD-810F
Vibration	MIL-STD-810F
Relative humidity(non-condensing)	5% to 95% RH

EMC CHARACTERISTICS			
EMI (Note 8)	EN55022		Class A, Class B
Radiated immunity	EN61000-4-3	10 V/m	Perf. Criteria A
Fast transient (Note 9)	EN61000-4-4	± 2kV	Perf. Criteria B
Surge (Note 9)	EN61000-4-5	± 1kV	Perf. Criteria B
Conducted immunity	EN61000-4-6	10 Vr.m.s	Perf. Criteria A

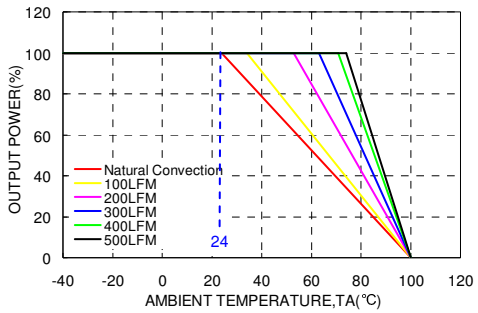
Model Number	Input Range	Output Voltage	Output Current		Output (2) Ripple & Noise	No load(3) Input Current	Eff(%) (4)
			Min. load	Full load			
QEB75-24S3P3	18 ~ 36 VDC	3.3 VDC	0mA	20A	100mVp-p	65mA	89
QEB75-24S05	18 ~ 36 VDC	5 VDC	0mA	15A	100mVp-p	110mA	90
QEB75-24S12	18 ~ 36 VDC	12 VDC	0mA	6.25A	100mVp-p	40mA	90
QEB75-24S15	18 ~ 36 VDC	15 VDC	0mA	5A	100mVp-p	50mA	90
QEB75-48S1P8	36 ~ 75 VDC	1.8 VDC	0mA	25A	100mVp-p	60mA	85
QEB75-48S2P5	36 ~ 75 VDC	2.5 VDC	0mA	25A	100mVp-p	50mA	87
QEB75-48S3P3	36 ~ 75 VDC	3.3 VDC	0mA	20A	100mVp-p	70mA	90
QEB75-48S05	36 ~ 75 VDC	5 VDC	0mA	15A	100mVp-p	80mA	90
QEB75-48S12	36 ~ 75 VDC	12 VDC	0mA	6.25A	100mVp-p	50mA	90
QEB75-48S15	36 ~ 75 VDC	15 VDC	0mA	5A	100mVp-p	50mA	90

Note :

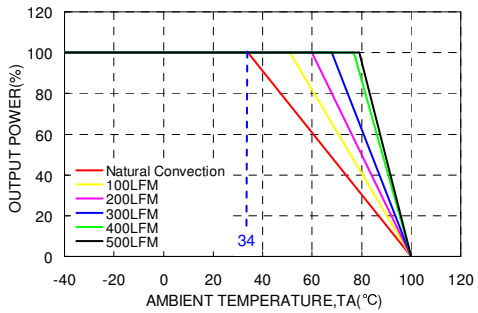
1. BELLCORE TR-NWT-000332. Case 1: 80% Stress, Temperature at 40ºC.
   MIL-HDBK-217F Notice2 @Ta=25 ºC, Full load(Ground, Benign, controlled environment)
2. Typical value at nominal input and full load. (20MHZ BW)
3. Typical value at nominal input and no load.
4. Typical value at nominal input and full load.
5. Maximum output deviation is 10% inclusive of trim. If remote sense is not being used, the +SENSE should be connected to its corresponding +OUTPUT and likewise the -SENSE should be connected to its corresponding –OUTPUT.
6. The positive logic and pin length are optional (see table). The CTRL pin voltage is referenced to -INPUT.
7. Heat-sink is optional and P/N：7G-0029A-F, 7G-0030A-F, 7G-0031A-F, 7G-0032A-F.
8. The QEB75 series standard module meets EN55022 Class A and Class B with external components.
   For more detail information, please contact with P-DUKE.
9. An external input filter capacitor is required if the module has to meet EN61000-4-4, EN61000-4-5.
   The filter capacitor Power Mate suggest: Nippon chemi-con KY series, 220 μ F/100V.
10. BASE-PLATE GROUNDING：When connect the four screw bolts to shield plane, the EMI could be reduced.
11. The converter is provided by basic insulation.

CAUTION: This power module is not internally fused. An input line fuse must always be used.

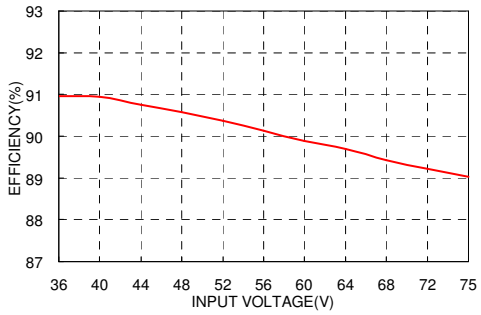
QEB75-48S05 Derating Curve



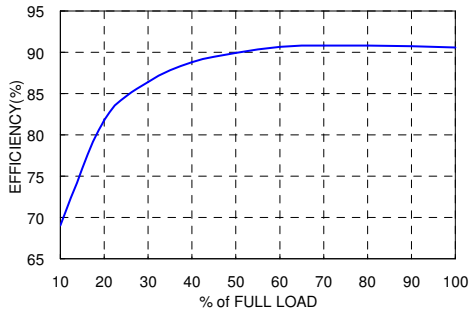
QEB75-48S05 Derating Curve
With Heat-sink 7G-0029(Note 7)



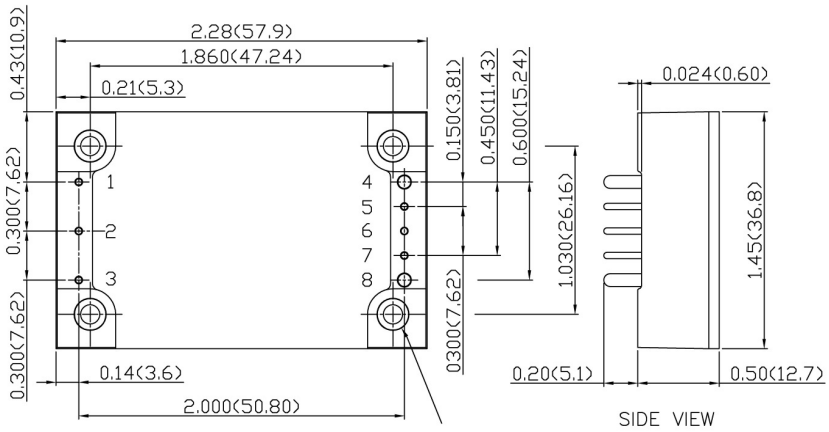
QEB75-48S05 Efficiency VS Voltage



QEB75-48S05 Efficiency VS Output Load



MECHANICAL DRAWING :



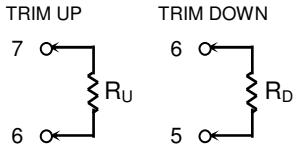
Threaded(Standard) 4−M3X0.5
Trough hole(Option) 4−ø0.126(ø3.2)
The screw locked torque:
MAX 0.34N.M3.5kgf−cm/0.34N−M(Note10)

1. All dimensions in Inch (mm)
   Tolerance: X.XX±0.02 (X.X±0.5)
   X.XXX±0.01 (X.XX±0.25)
2. Pin pitch tolerance ±0.01(0.25)
3. Pin dimension tolerance ±0.004 (0.1)

PIN CONNECTION		
PIN	DEFINE	DIAMETER
1	-INPUT	0.040 Inch（1.02mm）
2	CTRL	0.040 Inch（1.02mm）
3	+INPUT	0.040 Inch（1.02mm）
4	-OUTPUT	0.060 Inch（1.52mm）
5	-SENSE	0.040 Inch（1.02mm）
6	TRIM	0.040 Inch（1.02mm）
7	+SENSE	0.040 Inch（1.02mm）
8	+OUTPUT	0.060 Inch（1.52mm）

EXTERNAL OUTPUT TRIMMING

Output can be externally trimmed by using the method shown below.



Remote On/Off and Pin Options	Suffix
Negative remote ON/OFF logic, 0.200” pin length (standard)	-
Negative remote ON/OFF logic, 0.145” pin length	-L
Positive remote ON/OFF logic, 0.200” pin length	-P
Positive remote ON/OFF logic, 0.145” pin length	-S

Heat-Sink and Mounting Hole Tread Options	Suffix
Without heat-sink	-
7G-0029A-F	-HS
7G-0030A-F	- HS1
7G-0031A-F	- HS2
7G-0032A-F	- HS3
Through hole (No thread)	-TH

Example：QEB75-48S3P3-PHS
* The module can’t equip heat-sink with TH option.